

COMPREHENSIVE VALIDATION PACKAGE

ATL Applications

INVENTORY SHEET

WORK ORDER # 0909375B

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Completed by:

Kara McKiernan

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

10/05/09

(Date)

LABORATORY NARRATIVE
Nitrogen Dioxide by Radiello 166
Environmental Health & Engineering, Inc.
Workorder# 0909375B

Thirteen Radiello 166 (NO₂) samples were received on September 18, 2009. The procedure involves extraction of nitrite from reaction of NO₂ with triethanolamine. Absorbance of nitrite is then measured at 537 nm using a spectrophotometer. Results are reported in uG and uG/m³.

Sampling rate of 141 mL/min was provided by the manufacturer.

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A signature and date were not provided by the field sampler.

A Temperature Blank was not included with the shipment. Temperature was measured on a representative sample and was not within 4±2 °C. Coolant in the form of blue ice was present. Analysis proceeded.

Analytical Notes

Results were calculated based on 25 deg C without temperature correction. The actual exposure time was used to calculate sample concentrations and reporting limits.

An exposure time of 20160 minutes was used for the QC samples.

All media used for the sampling were supplied by the client. Blank subtraction was not performed on the sample results since the media used for Method Blanks may be from a different lot than the media used for the samples.

An Independent Calibration Verification (ICV) was not performed with this workorder.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.
- N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified

b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Sample Results and Raw Data

AIR TOXICS LTD.

ATL Application # 61 for RAD 166 (Nitrogen Dioxide)

Spectrophotometer

Field Sample ID.	Lab Sample ID.	Collection Date	Analysis Date	Dilution Factor	Reporting Limit (ug)	Reporting Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
102831	0909375B-13A	9/15/2009	9/18/2009	1.00	0.32	0.23	17	12
102832	0909375B-14A	9/15/2009	9/18/2009	1.00	0.32	0.23	15	11
102833	0909375B-15A	9/15/2009	9/18/2009	1.00	0.32	0.23	14	10
102834	0909375B-16A	9/15/2009	9/18/2009	1.00	0.32	0.23	17	12
102835	0909375B-17A	9/15/2009	9/18/2009	1.00	0.32	0.23	19	14
102836	0909375B-18A	NA	9/18/2009	1.00	0.32	0.22	ND	ND
102837	0909375B-19A	NA	9/18/2009	1.00	0.32	0.22	ND	ND
104971	0909375B-20A	NA	9/18/2009	1.00	0.32	0.22	ND	ND
104972	0909375B-21A	9/16/2009	9/18/2009	1.00	0.32	0.22	14	9.1
104973	0909375B-22A	9/16/2009	9/18/2009	1.00	0.32	0.22	24	16
104974	0909375B-23A	9/16/2009	9/18/2009	1.00	0.32	0.22	14	9.4
104974 Lab Duplicate	0909375B-23AA	9/16/2009	9/18/2009	1.00	0.32	0.22	14	9.3
104975	0909375B-24A	9/16/2009	9/18/2009	1.00	0.32	0.22	15	9.8
104976	0909375B-25A	9/16/2009	9/18/2009	1.00	0.32	0.22	7.3	4.8
Method Blank	0909375B-26A	NA	9/18/2009	1.00	0.32	0.22	ND	ND
Method Blank	0909375B-26B	NA	9/18/2009	1.00	0.32	0.22	ND	ND
CCV	0909375B-27A	NA	9/18/2009	1.00	0.32	0.22	%Rec 108	

COMMENTS: 1. NA=Not Applicable
 2. ND=Not Detected
 3. Exposure time of 20160 minutes was assumed for the QC samples.
 4. Background subtraction not performed.

Dioxide Radiello Calculation Worksheet

Workorder #: 09093758

0.141

Typically 0.96 for NO2

Sampling Rate (ug/(ppb*min))

0.141

25

Typically 25

Sampling T (deg C)

5

Typically 5 for NO2

Volume (ml)

9/18/2009

Date of Analysis:

1000ug/1ug

(Abs-Y-int)/DF
Slope

Conc(ug)S (ml)
0.5ml

Conc (ug) x 1000
Q x Duration

ppbx mww
24.45

Corrected Q	0.141	es into account temp	Duration (min)	DF	Conc (ug) (for 0.5ml Aliquot)	Conc (ug) in full 5 ml of sample	Conc (ppb)	Conc (ug/m ³)
LabSampleID	Client	Date of Collection	Abs	DF	Conc (ug) (for 0.5ml Aliquot)	Conc (ug) in full 5 ml of sample	Conc (ppb)	Conc (ug/m ³)
13A	102831	9/15/2009	0.113	1.00	1.716392255	17.16392255	6.503	12.234
14A	102832	9/15/2009	0.103	1.00	1.542854434	15.42854434	5.845	10.997
15A	102833	9/15/2009	0.098	1.00	1.456085523	14.56085523	5.516	10.379
16A	102834	9/15/2009	0.112	1.00	1.699038473	16.99038473	6.437	12.110
17A	102835	9/15/2009	0.126	1.00	1.941991422	19.41991422	7.357	13.842
18A	102836	NA	0.012	1.00	-0.036339739	-0.363397388	-0.128	-0.241
19A	102837	NA	0.012	1.00	-0.036339739	-0.363397388	-0.128	-0.241
20A	104971	NA	0.015	1.00	0.015721608	0.157216076	0.055	0.104
21A	104972	9/16/2009	0.093	1.00	1.369316613	13.69316613	4.817	9.063
22A	104973	9/16/2009	0.150	1.00	2.358482193	23.58482193	8.297	15.610
23A	104974	9/16/2009	0.096	1.00	1.421377959	14.21377959	5.000	9.408
23AA	104974	104974 Lab Duplicate	0.095	1.00	1.404024177	14.04024177	4.939	9.293
24A	104975	9/16/2009	0.099	1.00	1.473439305	14.73439305	5.183	9.752
25A	104976	9/16/2009	0.056	1.00	0.727226674	7.272266743	2.558	4.813
26A	Method Blank	NA	0.011	1.00	-0.244585124	-2.445851241	#DIV/0!	#DIV/0!
26B	Method Blank	NA	0.010	1.00	-0.053693521	-0.536935209	-0.189	-0.355
27A	CCV	NA	0.216	1.00	-0.071047303	-0.71047303	-0.250	-0.470
					3.503831813	35.03831813	12.326	23.191

QC Duration
20160

CCV Spike Amt ug
per 0.5 ml
3.25

1000ng/ug

Low Point/Df RL(ug)x 1000 ppb x mw
RL(ug)x5 (ml) 0.5ml Q x Duration 24.45

Calibration Data Calibration Date
9/18/2009 Linear Regression

0.5 ml Aliquot
of Cal STD

Slope 0.057624326
Y-int 0.014094053
R2 0.996777647

RL(ug) for 0.5 ml aliquot	RL (ug) in full 5 ml of sample	RL (ppb)	RL (ug/m3)	Result (ug)	Result (ug/m3)	%Rec
0.033	0.325	0.1	0.232	17.16392255	12.23405863	
0.033	0.325	0.1	0.232	15.42854434	10.99712	
0.033	0.325	0.1	0.232	14.56085523	10.37865069	
0.033	0.325	0.1	0.232	16.99038473	12.11036476	
0.033	0.325	0.1	0.232	19.41991422	13.84207884	
0.033	0.325	0.1	0.215	ND	ND	
0.033	0.325	0.1	0.215	ND	ND	
0.033	0.325	0.1	0.215	13.69316613	9.063025561	
0.033	0.325	0.1	0.215	23.58482193	15.609965	
0.033	0.325	0.1	0.215	14.21377959	9.407601321	
0.033	0.325	0.1	0.215	14.04024177	9.292742734	
0.033	0.325	0.1	0.215	14.73439305	9.752177081	
0.033	0.325	0.1	0.215	7.272266743	4.813257852	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	#DNV/0!	#DNV/0!	ND	#DNV/0!	
0.033	0.325	0.1	0.215	ND	ND	
0.033	0.325	0.1	0.215	ND	ND	
0.033	0.325	0.1	0.215	35.03831813	23.19063173	%Rec 108

ug/ml of NO2	ug of NO2	absorbance
0	0	0
0.065	0.0325	0.012
0.325	0.1625	0.02
1.3	0.65	0.051
6.5	3.25	0.217
13	6.5	0.381

QC Results and Raw Data

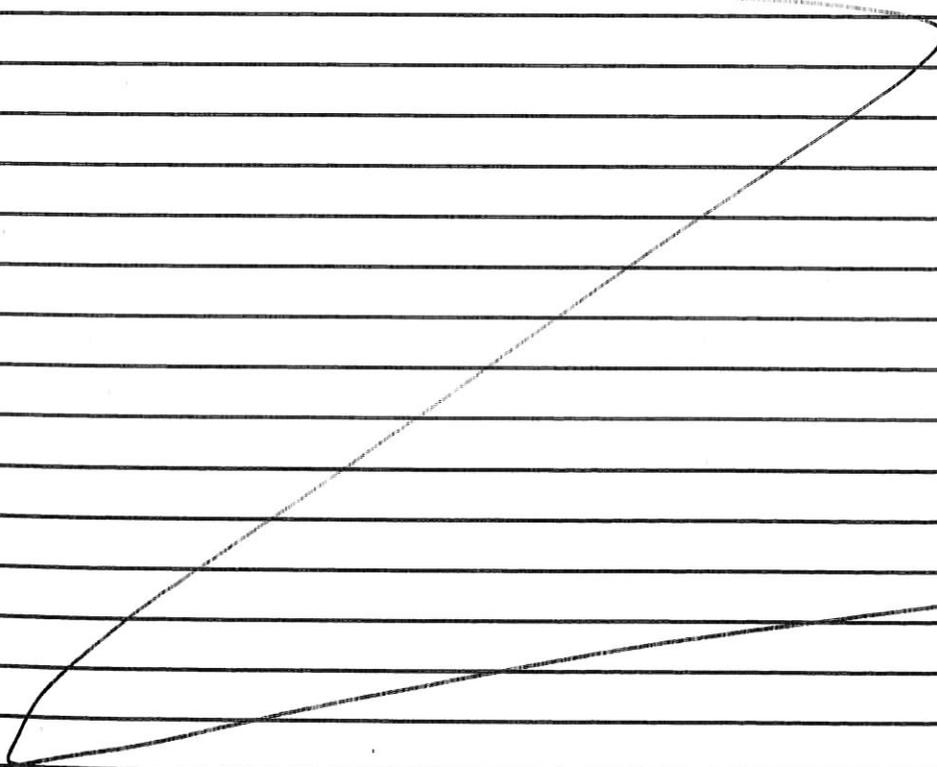
Standard ID: 1858-40
Project: Calibration Solution Rack 166
Analyst: M. Skidmore
Preparation Date: 9/18/09
Expiration Date: 9/18/09

Solvent: DI H₂O
Solvent Lot #: N/A

Procedure/Comments: Dissolve 5mg Sodium Nitrate, 97% (located ER2D) in 250 mL DI H₂O to yield 13 mg/mL or 13 mg/L. From this solution, dilute to make:

6.5 mg/mL (315:630) 1.3 mg/mL (130:650) 0.325 mg/mL (150:600) and 0.065 mg/mL (100:500)

To each of these calibration levels, transfer 0.5 mL to vial and add 5 mL of sulfanilamide, cap tightly, stir and wait 5 minutes. Then add 1 mL of NEDA solution, stir and wait 10 minutes. Measure absorbance at 537 nm.



MJS
9/18/09

M. Skidmore
Signed _____ Date 9/25/09

[Signature]
Reviewed _____ Date 9/21/09 Rev. 8/97

Shipping/ Receiving Documents

**180 Blue Ravine Road, Suite B
Folsom, CA 95630**

**Phone (916) 985-1000 FAX (916) 985-1020
Hours 8:00 A.M. to 6:00 P.M. Pacific**

COMPANY: Environmental Health & Engineering, Inc.
ATTENTION: Mr. Taeko Mineglshi
FAX #: 781-247-4305
FROM: Sample Receiving
Workorder #: 0909375B
of pages (Including Cover): 4

10/5/2009

Thank you for selecting Air Toxics Ltd. We have received your samples and have found no discrepancies. In order to expedite analysis and reporting, please review the attached information for accuracy.

Corrections can be faxed to **Ausha Scott at 916-985-1020.**

ATL will proceed with the analysis as specified on the Chain of Custody and Sample Login page.

FROM: Environmental Health and Engineering, Inc.
117 Fourth Avenue
Needham, MA 02494-2725

TO: AIR TOXICS

Please send invoices to ATTN: Accounts Payable
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 16512

The cost of this analysis will be covered by EH&E Purchase Order # 16512

For EH & E Data Coordinator - URGENT DATA

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	START	OTHER:Time/Date/Vol.	STOP
3A 102831	AIR/PASSIVE	NO2 /SO2/HF ANALYSIS	9/2/09	9/15/09	
14A 102832					
15A 102833					
16A 102834					
17A 102835					
18A 102836				0	
19A 102837				0	
20A 104971				0	
21A 104972				9/16/09	
22A 104973					
23A 104974					
24A 104975					
25A 104976					

Special Instructions:

- Standard turn around time
- Fax results 781-247-4305
- RETURN SAMPLES
- Additional report recipient M FRAGALA @ EHEINC.COM
- Rush by _____ date/time
- Electronic transfer - datacoordinator@ehinc.com

CUSTODY SEAL INTACT?
Y N NONE TEMP > 4°C
 Other

Each signatory please return one copy of this form to the above address

Relinquished by: _____ of Environmental Health & Engineering, Inc. Date: _____
 Received by: [Signature] of (company name) ATI 0850 Date: 9/18/09
 Relinquished by: _____ of (company name) Date: _____
 Received by: _____ of (company name) Date: _____
 Relinquished by: _____ of (company name) Date: _____
 Received by: _____ of (company name) Date: _____
 Lab Data
 Received by: _____ of Environmental Health & Engineering, Inc. Date: _____

SAMPLE RECEIPT SUMMARY

WORKORDER 0909375B

Client	Phone	Date Promised: 09/29/09 11:59 pm
Mr. Taeko Minegishi	800-825-5343	Date Completed: 10/1/09
Environmental Health & Engineering, Inc.	Fax	Date Received: 9/18/09
117 Fourth Avenue	781-247-4305	PO#: 16512
Needham, MA 02494		Project#: 16512
Sales Rep: TL		Total \$: \$ 585.00
		Logged By: MW

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
13A	102831	ATL Applications	9/15/2009	\$40.00
14A	102832	ATL Applications	9/15/2009	\$40.00
15A	102833	ATL Applications	9/15/2009	\$40.00
16A	102834	ATL Applications	9/15/2009	\$40.00
17A	102835	ATL Applications	9/15/2009	\$40.00
18A	102836	ATL Applications	NA	\$40.00
19A	102837	ATL Applications	NA	\$40.00
20A	104971	ATL Applications	NA	\$40.00
21A	104972	ATL Applications	9/16/2009	\$40.00
22A	104973	ATL Applications	9/16/2009	\$40.00
23A	104974	ATL Applications	9/16/2009	\$40.00
23AA	104974 Lab Duplicate	ATL Applications	9/16/2009	\$0.00
24A	104975	ATL Applications	9/16/2009	\$40.00
25A	104976	ATL Applications	9/16/2009	\$40.00
26A	Method Blank	ATL Applications	NA	\$0.00
26B	Method Blank	ATL Applications	NA	\$0.00
27A	CCV	ATL Applications	NA	\$0.00

Misc. Charges eCVP (13) @ \$5.00 each. \$65.00

Note: Samples received after 3 P.M. PST are considered to be received on the following work day.
 Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

BILL TO: Accounts Payable
 Environmental Health & Engineering, Inc.
 117 Fourth Avenue
 Needham, MA 02494

Analysis Code: Other GC

TERMS:

Reporting Method: ATL Application #61 NO2-Radiello 166

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

Sample Discrepancy Report

Identification

Initiated By: MW Project ID: 13297 PM: AS Date: 9/18/2009 Discrepancy Type: 1. 2. 3.

Workorder(s) affected: 0909375 Sample(s) affected: all

1. Sample Receipt Discrepancies

Narration Not Required:

- 1.1. Sample container (cartridge/tube/VOA vial) was received broken, however sample was intact.
- 1.2. No brass cap on canister.
- 1.3. Date of Collection noted on first sample, but no arrow down to indicate all samples.

Notify Lab for further determination:

- 1.4. Tedlar bag received with minimal volume.

Initials: _____ Date: _____

Narration Required in Lab Narrative and Sample Confirmation:

- 1.5. COC was not filled out in Ink.
- 1.6. COC Improperly relinquished / received.
- 1.7. Sample tags / can numbers do not match the COC.
- 1.8. Sample date error / missing on COC but noted on sample tag (check one).
- 1.9. Custody Seal on the outside of the container was broken / Improperly placed (check one).
- 1.10. ID-none on the sample Tag/Blank
- 1.11. Other (describe below).

Describe the Discrepancy: 1.6: no relinq. signature and date

2. Sample Receipt/Screening Discrepancies requiring PM notification

Document on Cover Page of Sample Receipt Confirmation and in Receiving Notes of Lab Narrative

If Section II. is filled out PM must be notified within 24 hrs of Initiation

- 2.1. COC was not received with samples.
- 2.2. Analysis method(s) is not specified / Incorrectly specified (check one) on the COC.
- 2.3. Incorrect sampling media / container for analysis requested.
- 2.4. Number of samples on the COC does not match the number of samples that were received.
- 2.5. Samples were received expired.
- 2.6. Sampling date (time for sulfur) is not documented for some / any samples (check one).
- 2.7. Sample received with amount of H₂O in the Tedlar Bag.
- 2.8. Sample cannot be analyzed. Container was received broken / leaking / flat / defective.
- 2.9. Tedlar bag / canister received emitting a strong odor; Sample can / cannot (check one) be analyzed.
- 2.10. Tedlar Bag for Sulfur analysis has metal fitting.
- 2.11. Environmental Supply Company valves
- 2.12. Sorbent samples-sampling volume was not provided
- 2.13. Flow controller used – canister samples received at ambient or under pressure.
- 2.14. Canister was at ambient pressure at time of pressurization and (check all that apply):
 - Canister failed leak check on two manifolds,
 - Canister valve was open,
 - Brass nut was loose/not present.
 - Sample can be analyzed
 - Cannot be analyzed
- 2.15. Canister sample received with a vacuum difference >5.0"Hg between the receipt vac. And the final vac. reported on the COC, indicating loss of vacuum.
- 2.16. Canister sample received at >15"Hg (not identified as a Trip/Field Blank).
- 2.17. Canister Trip Blank received at low vacuum (< 25"Hg).
- 2.18. Sorbent Sample received outside method required temperature of 2°C to 6°C; Ice / blue ice (check one) was present. A temp. Blank was / was not present (check one).
- 2.19. Other (describe below)

Initials: _____ Date: _____ Notify Receiving: Notify PM:

Describe the Discrepancy: samples rec'd at 8.4C

3. Lab Discrepancies requiring Team Leader/PM notification

Document in Analytical Notes of Lab Narrative

If Section III. is filled out PM must be notified within 24 hrs of Initiation

- 3.1. Tedlar Bag found to be leaking at the time of analysis; sample can / cannot (check one) be analyzed.
- 3.2. Tedlar Bag found to be flat/low volume; sample cannot be analyzed.
- 3.3. Sulfur samples received with insufficient time to analyze prior to expiration.
- 3.4. Canister found to be leaking at the time of analysis.
- 3.5. VOST tube saturated; bag dilution necessary.
- 3.6. Sample loss due to Instrument malfunction / broken glassware.
- 3.7. Low/high surrogate recoveries noted in QC/sample(s) for extractable samples.
- 3.8. Reporting Limit was raised.
- 3.9. Post weight > Pre weight in field/lab Blank for PM10/TSP samples.
- 3.10. Other (describe below).

Initials: _____ Date: _____ Notify Receiving: Notify PM:

Team Lead Initials: _____ Date: _____

Describe the Discrepancy: _____

How Does this Affect Client: _____

Project Manager Use Only

Project Manager Notification

Section 2 Complete

Section 3 Complete

Action:

It is not necessary to notify the client. Narrate the discrepancy in Receiving Notes/Analytical Notes of Lab Narrative.

PM Initials: _____ Date: _____

Client notification required. See attached client contact / email, or comments below:

Client Notification:

PM Initials: AS Person notified: _____ Date: 9/22/2009

Waiting for Client Reply

Comments: _____

Notify Lab Name: _____ Date: _____ Notify Receiving:

Additional notifications attached.

Additional Comments:

Other Records



Method : ATL Application #61 NO2-Radiello 166

CAS Number	Compound	Rpt. Limit (ug)
10102-44-0	Nitrogen Dioxide	1.0

DATA REVIEW CHECKLIST

Work Order #:

0909375B

- Analysis/Reporting vs. Project Profile/SOP requirements checked (i.e. 100% Dups, J-Flag to MDL, etc)
- The final report has the correct reporting list, special units, and header info.
- Lab Narrative is correct (proper method & description/Receiving & Analytical notes correct)
- Sample Discrepancy Report (SDR) is completed

- Corrective Action issued - # _____
- Unusual circumstances have been documented in the notes section below

LUMEN validation report present and initialed

CIRCLE (YES / NO)

- | | | | | | | |
|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Lab Blank, CCV, LCS and DUP met QC criteria |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Hold time is met for all samples |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Appropriate data qualifier flags are applied |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Manual integrations for samples and QC are properly documented |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Samples analyzed within the project or method specific clock |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Retention times have been verified |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Appropriate ICAL(s) included |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | At least one result per sample is verified against the target quant sheets/raw data |
-
- Dilution factor correctly calculated (sample load volume, syringe and bag dilutions, can pressurization(s))
 - Correct amount of sample analyzed (i.e. sample not over-diluted)
 - Spectra verified - documentation of spectral defense included (Section 5A of eCVP pkg)

 - TICs resemble reference spectra
 - TICs between duplicate samples are consistent
 - Checked samples for trends (i.e. Influent vs. Effluent, Field Dups, Field/Trip Blank, etc.)
 - Data for multiple analyses of sample(s) has been evaluated for comparability of results

 - Special units for all samples in the final report are correctly calculated
 - Manually entered results checked (i.e. TPH/NMOC)

 - Chain of Custody verified for any special comments (i.e. different compounds/RLs, action levels)
 - Chain of Custody scanned correctly
 - Verify sample id's vs. chain of custody
 - Date MDL(s) performed per instrument(s)

 - Samples pressurized w/ appropriate gas (N₂ or He) Other (i.e. Tedlar bag, cartridge, sorbent)
 - Final pressure consistent with canister size (6L vs. 1L)
 - Verify receipt pressures

 - Verify canister ID #'s
 - Final invoice amount correct (adjusted for TAT, Penalties, Re-issue Charges etc.)

 - MDL date(s) present for all instruments utilized
 - Client LUMEN report reviewed for accuracy and completeness

Notes: (to include: noting samples with QA/QC problems, Blanks with positive hits, narratives, etc.)

A/R:

Dup: 23 A

ICV was not analyzed

M/Q:

A ₁ / (Analytical Review/Date)	R/T (Reporting Review/Date)	M (Management Review/Date)	Q (QA Review/Date)
A ₁ :	R: 9/29/09	M: 10/1/09	
A ₂ :	T:		